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(71) Applicant *(for all designated States except US)*: THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: CAPECI, Scott, William [US/US]; 3285 Citation Lane, North Bend, OH 45052 (US). NORWOOD, Kevin, Todd [US/US]; 311 Hilltop Lane, Cincinnati, OH 45215 (US). MORT, Paul, R., III [US/US]; 510 Compton Road, Cincinnati, OH 45215 (US). PERKIS, Kristin, Nicole [US/US]; 1856 Tilden Avenue #2, Norwood, OH 45212 (US). BURGESS, George [GB/GB]; 81 Windburgh Drive, Southfield Lea, Cramlington, Northumberland NE23 6NT (GB).

(74) Agents: REED, T., David et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217–1087 (US).

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(54) Title: GRANULAR DETERGENT COMPOSITIONS HAVING IMPROVED SOLUBILITY PROFILES

(57) Abstract

Granular detergent composition having an average bulk density of at least about 400 g/L and characterized by a rate of dispersion under stressed cold-water conditions as defined by the equation (1), where R is the residual undispersed detergent at any point in time, t, R is the long term residual undispersed detergent having a value of less than about 14 % of the total amount of an initial dosage of detergent, t is any single point in time, m is a stretching exponent having a value of less than about 2, DT is dispersion time having a value of less than about 0.5 and t_{wash} is the time of the wash cycle; and at least 90 % of the insoluble particulate residues of said granular detergent composition having a particle size of less than 15 μm are provided. In preferred embodiments, the detergent composition has a rate of dissolution under stressed cold-water conditions as defined by the equation (2), where U is the fraction of undissolved surfactant at any point in time, t, U is the long term surfactant residual undissolved surfactant having a value of less than about 14 % of the total amount of an initial dosage of surfactant, t is any single point in time, n is a stretching exponent having a value of less than about 2, RT is dissolution time having a value of less than about 0.5 and t_{wash} is the time of the wash cycle.

$$R = R^* + (1 - R^*)\exp\left(-\left(\frac{t}{DT(t_{wash})}\right)^m\right) \quad (1)$$

$$U = U^* + (1 - U^*)\exp\left(-\left(\frac{t}{RT(twash)}\right)^n\right) \quad (2)$$